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Claims

1.   An arrangement for Transmission Control Protocol
(TCP) flow control in a communication system, the
arrangement comprising:
        means for determining delay in a transmit buffer of the
            system; and
        means for modifying TCP window size dependent on the
            determined delay.

2.   The arrangement of claim 1 wherein the means for
modifying TCP window size comprises:
        means for sending to a TCP server of the system in an
            acknowledge packet an indication of modified TCP
            window size.

3.   The arrangement of claim 1 or 2 wherein the means
for modifying TCP window size comprises:
        means for determining a new TCP window size as a
            function of the determined transmit buffer delay, a
            target transmit buffer delay, and a previously
            determined TCP window size.

4.   The arrangement of claim 3 wherein the function is
also a function of control loop gain.

5.   The arrangement of any one of claims 1-4 arranged to
make, following a change in TCP window size, no further
changes until receipt of a number of acknowledge packets
substantially equal to half the current number data units
in the system.

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6.   The arrangement of any one of claims 1-4 wherein the means for determining delay in a transmit buffer of the system comprises:

5   means for determining mean buffer delay of a plurality
         of data units passing through the transmit buffer
         and for producing the determined delay as a function
         of the mean buffer delay.

10   7.   The arrangement of claim 6 arranged to modify TCP window size, if the mean buffer delay is within a predetermined range about a target delay, by an amount related to the difference between the mean buffer delay and the target delay.

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8.   The arrangement of claim 7 arranged to modify TCP window size, if the mean buffer delay is outside a predetermined range about a target delay, by an amount related to difference between current mean buffer size

20   and a predetermined value.

9.   The arrangement of any one of claims 1-8 comprised in a network controller of the system.

25   10.   The arrangement of any one of claims 1-9 wherein the system comprises a radio communication system.

11.   The arrangement of claim 10 wherein the radio communication system comprises a UTRAN system.

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12.   A method for Transmission Control Protocol (TCP)
flow control in a communication system, the method
comprising:
      determining delay in a transmit buffer of the system;
5   and
      modifying TCP window size dependent on the determined
         delay.

13.   The method of claim 12 wherein the step of modifying
10   TCP window size comprises:
      sending to a TCP server of the system in an acknowledge
         packet an indication of modified TCP window size.

14.   The method of claim 12 or 13 wherein the step of
15   modifying TCP window size comprises:
      determining a new TCP window size as a function of the
         determined delay, a target transmit buffer delay,
         and a previously determined TCP window size.

20   15.   The method of claim 14 wherein the function is also
a function of control loop gain.

16.   The method of any one of claims 12-15 comprising
inhibiting making, following a change in TCP window size,
25   no further changes until receipt of a number of
acknowledge packets substantially equal to half the
current number data units in the system.

17.   The method of any one of claims 12-15 wherein the
30   step of determining delay in a transmit buffer of the
system comprises:

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    determining mean buffer delay of a plurality of data
        units passing through the transmit buffer and for
        producing the determined delay as a function of the
        mean buffer delay.

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18.   The method of claim 17 comprising modifying TCP
window size, if the mean buffer delay is within a
predetermined range about a target delay, by an amount
related to the difference between the mean buffer delay

10   and the target delay.

19.   The method of claim 18 comprising modifying TCP
window size, if the mean buffer delay is outside a
predetermined range about a target delay, by an amount

15   related to difference between current mean buffer size
and a predetermined value.

20.   The method of any one of claims 12-19 performed in a
network controller of the system.

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21.   The method of any one of claims 12-20 wherein the
system comprises a radio communication system.

22.   The method of claim 21 wherein the radio

25   communication system comprises a UTRAN system.

23.   A computer program element comprising computer
program means for performing substantially the method of
any one of claims 12-22.

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24. An integrated circuit comprising the arrangement of any one of claims 1-11.